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FINAL

Potable Water System Microscopic Particulate Analysis

McDonald Flats Campground

Salmon-Challis National Forest

Walsh Project Number: 6137-010

6/11/05

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FINAL
Potable Water System Microscopic Particulate Analysis

McDonald Flats Campground Salmon-Challis National Forest

6/11/05

Prepared For: USDA Forest Service Region 4

Prepared By: Z. Ross
Zane Ross

A. Walsh
Anne Walsh

Reviewed By: Allison A Haines
Allison Haines

Submitted by

WALSH ENVIRONMENTAL SCIENTISTS AND ENGINEERS, LLC
4888 Pearl East Circle, Suite 108
Boulder, Colorado 80301
(303) 443-3282

WALSH Project Number: 6137-010

MICROSCOPIC PARTICULATE ANALYSIS OF A DRINKING WATER SYSTEM

Water System Name: McDonald Flats Campground

District: Cobalt Forest: Salmon-Challis

Drinking Water System I.D. Number: 0001.000009

Date of MPA: 6/11/05

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B. System Description
C. Groundwater Under the Direct Influence of Surface Water (GWUDI) Evaluation.
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A. Site Identification

1. District:	Cobalt
2. Water System Name:	McDonald Flats Campground
3. Forest:	Salmon-Challis
4. Water System I.D. Number:	0001.000009
5: Date of MPA:	6/11/05
6. MPA Performed By:	Zane Ross
	Anne Walsh
7. Date of this Report:	6/11/05
8. Report Reviewed By:	Allison Haines

Reviewed By: _____

District Ranger Date

Reviewed By: _____

Recreation Staff Date

Reviewed By: _____

Forest Engineer Date

B. System Description

The Mc Donald Flat Recreation site is a seasonal campground located on Forest Road 055 approximately 36 miles southwest of Salmon, Idaho. It contains approximately 9 campsites and is served by a transient, non-community (TNC) water system consisting of a drilled well and a handpump.

The 6-inch diameter well of 35 feet depth and unknown capacity is located across Panther Creek form the campsite entrance. The well casing extends approximately 4 inches above natural grade and should be extended to 18 inches above natural grade. It is surrounded by a concrete slab in good condition with a drainage trough; however, the concrete grout sanitary seal is cracking and should be replaced.

The single point of use is a handpump installed on the well casing. The handpump was not equipped with a shroud or a flange gasket. Additionally, the packing could not be evaluated as the handpump was out of use and a handle was not attached at the time of sampling. The handpump appeared to be rusty and should be repainted.

Panther Creek located approximately 40 feet west and down gradient from the well is a potential source of contamination. An old vault toilet located approximately 180 feet northeast and cross gradient and a new vault toilet located approximately 150 feet northeast and cross gradient from the well are potential sources of contamination if compromised.

There were no use records, system construction information, or a site sampling plan available for review at the site. There were no bacteriological, chemical, physical, nitrate/nitrite, or previous microscopic particulate analysis (MPA) test results provided for review.

C. Groundwater Under the Direct Influence of Surface Water (GWUDI) Evaluation

An Environmental Protection Agency (EPA) Region VIII approved assessment of Groundwater Under the Direct Influence of Surface Water (GWUDI) was performed at Ansel Watrous Campground. The assessment was performed to determine the probability of GWUDI. All systems receiving 40 points or more are determined to be probable GWUDI systems, and operators must eliminate the risk factors relating to surface water influence, perform a microscopic particulate analysis (MPA) to determine the extent of surface water influence, or comply with the EPA Surface Water Treatment Rule (SWTR) (54 FR 28486, June 29, 1989). If MPA results indicate the existence of a GWUDI system, the system operators must fully comply with the EPA SWTR. The SWTR includes treatment technique requirements for filtered and unfiltered systems that are intended to protect against the adverse health effects of exposure to Giardia lamblia, viruses, and Legionella, as well as many other pathogenic organisms. Those requirements include (1) requirements for maintenance of a disinfectant residual in the distribution system; (2) removal and/or inactivation of 3 log (99.9%) for Giardia and 4 log (99.99%) for viruses; (3) combined filter effluent turbidity performance standard of 5 NTU as a maximum and 0.5 NTU at the 95th percentile monthly, based on 4-hour monitoring for treatment plants using conventional treatment or direct filtration (with separate standards for other filtration technologies); and (4) watershed protection and other requirements for unfiltered systems.

The water source at McDonald Flats Campground received the following GWUDI score as totaled below (and as shown in Section F-2):

Well, less than 50 feet deep...5
Distance between a surface water source and casing or nearest collector lateral is less t feet...10

Total GWUDI Score = 15

D. Potential Sources of Contamination

The following potential sources of contamination were identified at the site:

Potential Source of Contamination	*Distance (ft)*	*Direction*	*Gradient*
Panther Creek	approximately	West	Downgradient
Out of use vault toilet	approximately	Northeast	Crossgradient
Vault toilet	approximately	Northeast	Crossgradient

E. Microscpic Particulate Analysis (MPA) Sampling Event

1. MPA Procedure

The following procedure was followed at McDonald Flats Campground for MPA sample collection.
This procedure satisfies sampling requirements for the Consensus Method for Determining Groundwater Under the Direct Influence of Surface Water Using Microscopic Particulate Analysis (MPA); EPA 910/9-92-029.

•Samplers raised the handpump off of the well casing without removing or displacing down-hole components.
•Samplers lowered a submersible pump operated by a hand-held generator into the well below the static water level.
•Samplers purged water from the well during the sampling event at a rate no greater than one gallon per minute. Note: samplers recorded pH, conductivity, turbidity, and temperature prior to sampling and upon sampling completion (see Section F-3-C).
•Water was diverted to the ground away from the well after it was passed through the sampling device in a way that minimized surface erosion. Note: surface erosion prevention measures included drainage troughs, plastic sheeting and engineering controls.
•Following sample collection completion, samplers secured the handpump to the top of the well casing.
•The sample filter was placed in a plastic zip-loc bag and wrapped in insulation and an ice pack.

2. MPA Laboratory

The sample was delivered to CH Diagnostic and Consulting Services, Inc. in Loveland, Colorado within 24 hours of collection. CH Diagnostic analyzed the sample filter using the method outlined in EPA manual, Consensus Method for Determining Groundwater Under the Direct Influence of Surface Water Using Microscopic Particulate Analysis (MPA); EPA 910/9-92-029. Although CH Diagnostics does not participate in any state or federal certification program because there are currently none available, it does participate in the method review process performed as part of method updates for the industry. In addition, CH Diagnostic was actively involved in the method development process that led to the current approved protocol for microscopic particulates, giardia and cryptosporidium analysis.

The laboratory analytical procedures are compliant with industry approved methodologies. The laboratory uses standardized sample slide reading protocols, random Quality Assurance (QA) officer checks on sample results and/or slide readings, and multiple analytical technicians confirm unknowns. Additionally, an experienced WALSH chemist has reviewed all MPA sample results.

3. MPA Discussion and Results

A microscopic particulate analysis is used to classify a groundwater source as GWUDI based on the detection of certain surface water organisms in the groundwater supply. The presence of these organisms is an indication that the supply is influenced by surface water. Another indication of surface water influence on a groundwater source is if the groundwater turbidities or temperatures rise and fall with changes in the surface water conditions. The extent to

which a groundwater source is influenced by surface water is dependent upon the depth of the well, the type of underlying aquifer, the distance between the groundwater source and a surface water source, the well construction, and the drainage control around the wellhead area.

The water source at McDonald Flats Campgroundwas sampled for microscopic particulates at the request of the USDA Forest Service Region 2. The sample filter was analyzed for waterborne particulates and a relative risk was determined based on the following scale:

- >20 = high risk of direct surface water influence
- 10-19 = moderate risk of direct surface water influence
- <9 = low risk of direct surface water influence

If the initial score of an MPA is low, regulating agencies may still require a second MPA test. Additionally, if the score is medium to low, regulating agencies may require annual MPA testing, dye tests, and comparisons of turbidity, pH, conductivity, and temperature between the groundwater source and the nearby surface water. Regulating agencies may also require water treatment (i.e. disinfection) of a groundwater source even if the MPA score is low to medium. However, if the MPA score is high, regulating agencies will require filtration and treatment/disinfection of the groundwater source within 18 months.

The MPA results for the water source at McDonald Flats Campground are summarized in Table E-1. Detailed laboratory results, including specific particulate detects are attached in Section F-3-B.

Table E-1: MPA Results Summary

Sample ID	Sample Date/Time	Volume Purged (gallons)	Sample Information	MPA Score
0001.000009	6/11/2005 6:15:00 AM to 6/11/2005 3:42:00 PM	501.0 gallons	pH = 9.2 to 7.89 Temp. = 5.6°C to 10.9°C Turb. = 17.9 NTU to 0.00 NTU Cond. = N/A pCi/L to N/A pCi/L	0

°C = degrees Celsius
ft. = feet
pCi/L = picocuries per liter
Cond. = conductivity
ID = identification
MPA = microscopic particulate analysis
NTU = nephelometric turbidity unit
Temp. = temperature
Turb. = turbidity

The MPA score for the water source was determined based on relative risk factors associated with the presence of primary bio-indicators (particulates). Table E-2 summarizes the numerical range of each particulate associated with surface water influence counted per 100 gallons of water, and indicates the significance of the number counted (i.e. extremely heavy, heavy, moderate, rare, or not significant). Table E-3 lists the relative risk factors associated with the number of each particulate counted.

Table E-2: Numerical Range of Each Primary Bio-Indicator Counted Per 100 Gallons Water

Indicators of Surface Water	EH	H	M	R	NS
Giardia	>30	16-30	6-15	1-5	<1
Coccidia	>30	16-30	6-15	1-5	<1
Diatoms	>150	41-149	11-40	1-10	<1
Other Algae	>300	96-299	21-95	1-20	<1
Insects/Larvae	>100	31-99	16-30	1-15	<1
Rotifers	>150	61-149	21-60	1-20	<1
Plant Debris	>200	71-200	26-70	1-25	<1

EH = extremely heavy
H = heavy
M = moderate
R = rare
NS = not significant

Table E-3: Primary Bio-Indicators and Associated Risk Factors

Indicators of Surface Water	Relative Risk Factor				
	EH	H	M	R	NS
Giardia	40	30	25	20	0
Coccidia	35	30	25	20	0
Diatoms	16	13	11	6	0
Other Algae	14	12	9	4	0
Insects/Larvae	9	7	5	3	0
Rotifers	4	3	2	1	0
Plant Debris	3	2	1	0	-

EH = extremely heavy
H = heavy
M = moderate
R = rare
NS = not significant

The MPA results for this water sources are scored as follows:

Particulate detects (see Section F-3-B for laboratory MPA results).

Algae = 0/100 gallons
Diatoms = 0/100 gallons
Plant Debris = 0/100 gallons
Rotifers = 0/100 gallons
Nematodes= 0/100 gallons
Pollen (pine) = 41/100 gallons
Ameba = 0/100 gallons
Ciliates = 0/100 gallons
Colorless Flagellates = 0/100 gallons
Crustaceans = 0/100 gallons
Other Arthropods = 0/100 gallons
Other = Highest value was recorded from results of two MPA.
Amorphous Debris = inorganic precipitate, clay (1-2 micrometers), silt (2-50 micrometers), aggregates

From Tables E-2 and E-3, the MPA Score for this site is:

0 - Low Risk per EPA Consensus Method

F. Attachments

1. System Construction Information

2. Groundwater Under the Direct Influence of Surface Water (GWUDI) Evaluation

3. Microscopic Particulate Analysis Sampling Event
A. Apparatus
B. Results
C. Field Notes and Database Forms

4. Maps and/or Site Plan

5. Photographs

1. System Construction Information

No System Construction Information

was available for this site.

2. Groundwater Under the Direct Influence of Surface Water (GWUDI) Evaluation

Walsh
Environmental Scientists and Engineers, LLC

System CN: 0001.000009

United State Environmental Protection Agency, Region 10
Idaho Operations Office

ASSESSMENT OF GROUND WATER UNDER THE DIRECT INFLUENCE OF SURFACE WATER AND SUBJECT TO THE SURFACE WATER TREATMENT RULE

A. Type of Subsurface Water Source (Check Only One)

- ☐ Well, equal to or greater than 50 feet deep...0
- ☑ Well, less than 50 feet deep or no well log available...5
- ☐ Spring...10
- ☐ Infiltration Gallery...10

B. Historical Microbiological Contamination (Check all that apply)

- ☐ History or suspected outbreak of Giardia or other pathogenic organisms associated with surface water with current system configuration...50
- ☐ Record of total coliform acute MCL violations over last 3 years...30

Record of total coliform monthly MCL violations over last 3 years

- ☐ One month...5
- ☐ Two months...10
- ☐ Three months...20

- ☐ Regulatory agency verifies complaints about turbidity or suspected waterborn disease...10

C. Hydrogeological Features (Check all that apply)

Distance between a surface water source and casing or nearest collector lateral

- ☐ Over 200 feet...0
- ☐ 100-200 feet...5
- ☑ Less than 100 feet...10

- ☐ Intake is located on floodplain at approximate altitude of stream...20
- ☐ Surface runoff drains toward intake...15
- ☐ Exposed aquifer that is coarse alluvial, cavernous, or fractuered is used for water supply...15

D. Water Intake Structure (Check all that apply)

- ☐ Poorly constructed well, or spring collection chamber (uncase, or casing not cemented to depth of at least 20 feet below land surface)...15
- ☐ Poor sanitary seal, or seal without acceptable material...15
- ☐ Intake open to atmosphere...15
- ☐ Leaks of source collector that allow entry of surface water...15

Remarks: No previous test results or well log available for review

An MPA is required for all sites scoring 40 points or more.

Total GWUDI Score = 15

3. Microscopic Particulate Analysis Sampling Event

A. Apparatus

EQUIPMENT

1. Inlet hose (washing machine hose)
2. Backflow preventor (BP) (not included because air gap at effluent)
3. Pressure regulator (PR)
4. Pressure gauge (PG)
5. Filter housing (H) Fulflo LT10
6. 1 micron nominal porosity filter (F) Parker Hannifan M39R10A
7. Meter (M)
8. Limiting flow orifice (LFO) 3.785 L/min. (1 gal/min)

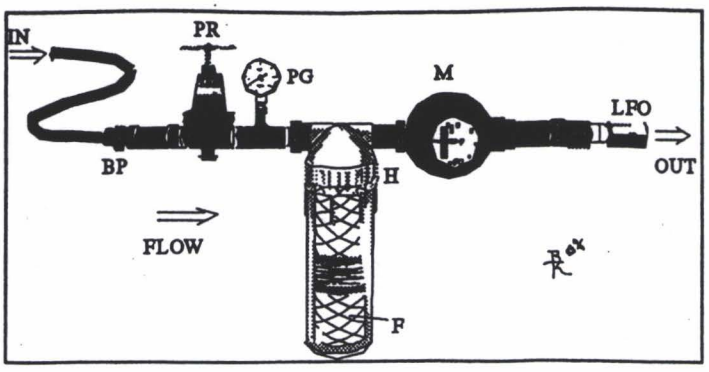
Additional Equipment for chlorinated samples:

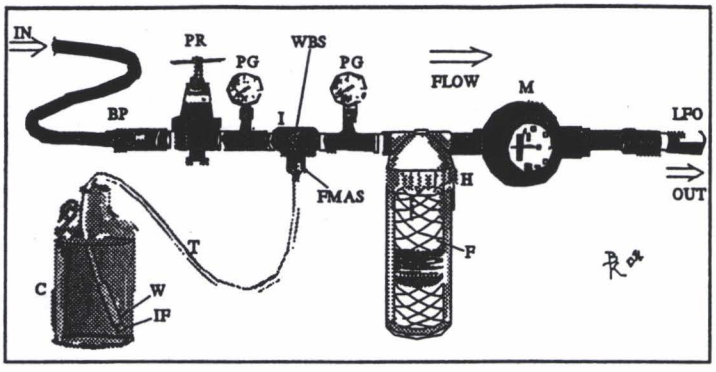
9. Large sanitary container (C) for sodium thiosulfate solution
10. Injector (I) with:
    a. water bypass screw (WBS)
    b. Fine metering adjustment screw (FMAS)
    c. tubing (T)
    d. injector filter (IF)
    e. porcelain weight (W)
11. Second pressure gauge

Equipment on loan from CH Diagnostic is clean and ready to use. Otherwise, clean equipment thoroughly before use.

OTHER SUPPLIES

(1) Turbidimeter (optional); (2) pH meter (optional); (3) Thermometer (optional); (4) Sanitary latex gloves; (5) Heavy duty zip-loc 1 gallon freezer bags; (6) Frozen ice packs and cooler for shipping; (7) For chlorinated water: sodium thiosulfate and distilled water or sample water (see page 2); (8) For non-pressurized source: 2-4 Liter/minute gas or electric pump.





Example of a Meter Reading						
Meter Reading						
0	**0**	**0**	**2**	**5**	**3**	**0**
1,000,000 gallon mark	100,000 gallon mark	10,000 gallon mark	1,000 gallon mark	100 gallon mark	10 gallon mark	This digit remains zero, read the gallons from the red meter hand.
This meter reads 2,530. If the red meter hand is on the 4, then it reads 2,534.						

B. Results

ANALYSIS FOR WATERBORNE PARTICULATES

Invoice 20050463

CH Diagnostic and Consulting Service, Inc.
214 SE 19th Street, Loveland, CO 80537
Brec L. Clay, President/Treasurer; Gregory D. Sturbaum, President/Secretary
(970) 667-9789

Customer 20031455
Walsh Environmental
4888 Pearl E. Circle, Suite 108
Boulder, CO 80301

Laboratory Information
Postal Express; 6/15/2005; 1035 Hrs; 11.6°C; Wound
Results submitted by:

Sample Identification: McDonald Flat, #1, 0001.000009

Sample Information: SOURCE: Drilled Well; 40' from surface water; Unchlorinated; pH 9.2 —» pH 7.89; 5.6°C —» 10.9°C; 18.4 NTU

Sample Date & Time: 6/11/2005 06:15 AM —» 6/11/2005 03:42 PM **Sampler:** Z. Ross/A. Walsh

Amount: 1896.285 L (501 gal) **Filter Color:** Dark rust **Filter Type:** Polypropylene wound cartridge

Date/Time Eluted: 6/15/2005 11:13 AM **Centrifugate:** 0.633 mL/100 L

RESULTS OF MICROSCOPIC PARTICULATE ANALYSIS

Amount of sample assayed: 1.9 L

Amorphous Debris	inorganic precipitate, clay (1-2 µm), silt (2-50 µm), aggregates
Algae	ND
Diatoms	ND
Plant debris	ND
Rotifers	ND
Nematodes	ND
Pollen (pine)	ND
Ameba	ND
Ciliates	ND
Colorless Flagellates	ND
Crustaceans	ND
Other Arthropods	ND
Other	ND

Giardia and Coccidia are none detected (ND) by MPA unless reported under "Other".

This sample was analyzed for particulates following the Environmental Protection Agency Consensus Method for Determining Groundwaters Under the Direct Influence of Surface Water Using Microscopic Particulate Analysis (MPA): 1992. USEPA, Port Orchard, WA. EPA 910/9-92-029. All limitations stated in the methods apply. If HV capsule or foam filter was received, method was modified by filtering sample through a Pall Envirochek™ HV capsule or IDEXX Filta-Max™ filter at the sample site. If *Giardia* and *Cryptosporidium* Analysis was also performed, particulate extraction was modified.

COMMENTS: Score: 0-Low Risk per EPA Consensus Method referenced above.

ANALYSIS FOR WATERBORNE PARTICULATES

Invoice 20050463

CH Diagnostic and Consulting Service, Inc.
214 SE 19th Street, Loveland, CO 80537
Brec L. Clay, President/Treasurer; Gregory D. Sturbaum, President/Secretary
(970) 667-9789

Customer 20031455
Walsh Environmental
4888 Pearl E. Circle. Suite 108
Boulder, CO 80301

Laboratory Information
Postal Express: 6/15/2005; 1035 Hrs; 11.4°C; Wound
Results submitted by:

Sample Identification: McDonald Flat, #2, 0001.00010

Sample Information: SOURCE: Drilled Well; 40' from surface water; Unchlorinated; pH 8.03 —» pH 7.79; 6.1°C —» 14.5°C; 6.93 NTU

Sample Date & Time: 6/11/2005 06:15 AM —» 6/11/2005 03:37 PM Sampler: A. Walsh/Z. Ross

Amount: 2052.605 L (542.3 gal) Filter Color: Dark rust Filter Type: Polypropylene wound cartridge

Date/Time Eluted: 6/15/2005 12:50 PM Centrifugate: 0.132 mL/100 L

RESULTS OF MICROSCOPIC PARTICULATE ANALYSIS

Amount of sample assayed: 9.2 L

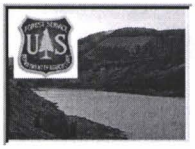
Amorphous Debris	inorganic precipitate, clay (1-2 µm), silt (2-50 µm), aggregates
Algae	ND
Diatoms	ND
Plant debris	ND
Rotifers	ND
Nematodes	ND
Pollen (pine)	41/100 Gal
Ameba	ND
Ciliates	ND
Colorless Flagellates	ND
Crustaceans	ND
Other Arthropods	ND
Other	ND

Giardia and Coccidia are none detected (ND) by MPA unless reported under "Other".

This sample was analyzed for particulates following the Environmental Protection Agency Consensus Method for Determining Groundwaters Under the Direct Influence of Surface Water Using Microscopic Particulate Analysis (MPA): 1992. USEPA, Port Orchard, WA. EPA 910/9-92-029. All limitations stated in the methods apply. If HV capsule or foam filter was received, method was modified by filtering sample through a Pall Envirochek™ HV capsule or IDEXX Filta-Max™ filter at the sample site. If *Giardia* and *Cryptosporidium* Analysis was also performed, particulate extraction was modified.

COMMENTS: Score: 0-Low Risk per EPA Consensus Method referenced above.

C. Field Notes and Database Forms



Microscopic Particulate Analysis
Field Data
Region - 04

Forest	Salmon-Challis	Code:	04
Water System Name:	McDonald Flats Campground		
District:	Cobalt		
County:	Lemhi	Date Sampled:	6/11/05

System CN:	0001.000009		
Additional ID #1:		Type:	
Additional ID #2:		Type:	
Real Property Number:			

MPA - Field Data

1. General Site Information
2. Contacts/Escorts
3. Short Survey
4. Well Log Information
5. GPS and Photographs
6. Sample Information
7. Field Notes

MPA-Field Data

System CN: 0001.000009

1. General Information

Type of Site:	Recreation	Classification:	transient, non-community (TNC)
Type of system:	well with handpump	Currently in use:	Yes
Year of installation:	Unknown		

Approximate number of people per day using site: Unknown

Site opened annually from Unknown to October

Location: Located off Forest Road 021 approximately 36 miles southwest of Salmon, Idaho

Remarks:

System CN: 0001.000009

2. Contacts/Escorts

Forest Service Contact:	None		
Title:	Not Applicable		
Was sampling appointment scheduled in advance?	Yes	Method of Scheduling:	Unknown
Additional Individuals Present During MPA:	None		
Campers / Recreational Individuals Present During MPA	No		

Remarks:

System CN: 0001.000009

MPA - Field Data

3. Short Survey

Spring

Spring Type: | Spring Capacity: 0 gpm | ☐ Adequate Fence | ☐ Adequate Lid

Spring Improvements:

Well

☐ Casing is 12" above natural grade ☑ Concrete slab is present

Improvements: Casing extends approximately 4 inches above natural grade and should be extended to 18 inches.

Pump

☑ Handpump ☐ Submersible Pump ☐ Supply Pump

☐ Adequate Pump Protection ☐ Adequate Pump Protection

Improvements: Handpump should equipped with a shroud and be repainted

Treatment

Disinfection Type: Not Applicable ☐ Sedimentation ☐ Filtration

Improvements:

Storage

☐ Hydropneumatic	☐ Below Ground	☐ Above Ground
Number: 0	Number: 0	Number: 0
Capacity: 0 Gallons	Capacity: 0 Gallons	Capacity: 0 Gallons

Improvements:

System CN: 0001.000009

MPA - Field Data

3. Short Survey Continued

Distribution Line

Material: Not Applicable

Approximate Length: 0 Feet

Number of Connections: 0

Number of Drains: 0

Improvements:

Power Supply

Power Supply Type: Not Applicable

Improvements:

Potential Sources of Contamination

Stream located approximately 40 feet west and downgradient from well, an old vault toilet located approximately 180 feet northeast and crossgradient from well, and a new vault toilet located approximatley 150 feet northeast and crossgradient from well

Remarks:

MPA - Field Data

System CN: 0001.000009

4. Well Log Information

☐ Spring

Well

Well Permit Number: Unknown
Driller Name: Unknown
Well Log: Unknown
Phone:
Year Drilled:
License #:
Section: 25
Township: 20 N
Range: 22 W
Type: Drilled

Casing
Diameter: 6 inches
Material: Steel
Wall Thickness: 5/8 inch Inches

Depth
Ground surface to bottom of well: 35 Feet
Ground surface to bottom of casing: Unknown Feet
Ground surface to first draw: Unknown Feet
Screen Interval From: 0 to: 0 Feet Below Ground Surface

Static water level: feet below ground surface
Capacity: (gpm) Unknown at feet drawdown:
Type of sanitary seal: Cement Grout

Well Screen
Well Screen Material: Unknown
Sanitary Cover Type: Handpump
Vented: Yes
Pitless Adapter: Not Applicable

Remarks: Well vent is not screened and cement grout is cracked and does not surround well. Well depth provided by Forest Service.

MPA- Field Data

System CN: 0001.000009

5. GPS and Photographs

GPS

Latitude: 45 Degrees 2 Minutes ☑ N ☐ S Elevation: 5431 Feet

Longitude: 114 Degrees 18 Minutes ☐ E ☑ W Accuracy: 23 Feet

Object / Location Being Mapped: Well

Type of GPS Equipment: Hand-held Garmin Etrex Venture

Equipment Problems: None

Comments: None

Photographs

☐ Photographs Were Taken

Description of Photographs:

Remarks: None

MPA-Field Data

System CN: 0001.000009

6. Sample Information

Primary Sample

Volume Sampled: 501.0 gallons

Sample Identification Number: 0001.000009

Start Date: 6/11/2005
Start Time: 6:15:00 AM
Stop Date: 6/11/2005
Stop Time: 3:42:00 PM

Analyses
- [x] Analyze by Method Number EPA 910/9-92-029
- [ ] Add Giardia and Cryptosporidium
- [ ] Sampled water was chlorinated

Initial Parameters			Final Parameters		
ph:	9.2		pH:	7.89	
Temperature:	5.6	C	Temperature:	10.9	C
Turbidity:	17.9	NTU	Turbidity:	0.00	NTU
Conductivity:	N/A	pCi/L	Conductivity:	N/A	pCi/L

Field Duplicate Sample

- [x] Field Duplicate Taken at this site

Volume Sampled: 542.3 gallons

Field Duplicate Identification Number: 0001.000010

Start Date: 6/11/2005
Start Time: 6:15:00 AM
Stop Date: 6/11/2005
Stop Time: 3:37:00 PM

Analyses
- [x] Analyze by Method Number EPA 910/9-92-029
- [ ] Add Giardia and Cryptosporidium
- [ ] Sampled water was chlorinated

Initial Parameters			Final Parameters		
pH:	8.03		pH:	7.79	
Temperature:	6.1	C	Temperature:	14.5	C
Turbidity:	6.93	NTU	Turbidity:	0.00	NTU
Conductivity:	N/A	pCi/L	Conductivity:	N/A	pCi/L

All Samples

Report Results To: Allison Haines

Method of Sample Delivery: USPS Express

- [ ] Rush Analyses (Quick Turn-around)

Special Instructions:

Remarks: Two samples were taken at the same time for this campground. Sample #1 is the 'primary' and #2 is the 'duplicate' but each is considered a seperate MPA.

Laboratories

System CN: 0001.000009

Laboratory: CH Diagnostics

Laboratory Address: CH Diagnostics 214 19th Street Loveland, Colorado 80537

Remarks: None

MPA - Field Data

System CN: 0001.000009

7. Field Notes

Field Notes: The sampling event had no problems and samplers were able to sample the well without any malfunctions of the equipment.

4. Map and/or Site Plan

SYMBOLS FOR FIELD SKETCHES

SOURCES

⊕ SUB	Indicates a well source with a submersible pump
⊕ HP	Indicates a well source with a handpump
⊕ SPR	Indicates a spring source
⊕ SUR	Indicates a surface source
⊕ MUN	Indicates a municipal source

PUMPS

× SUB	Indicates a submersible pump
× SUP	Indicates a supply pump

TREATMENT

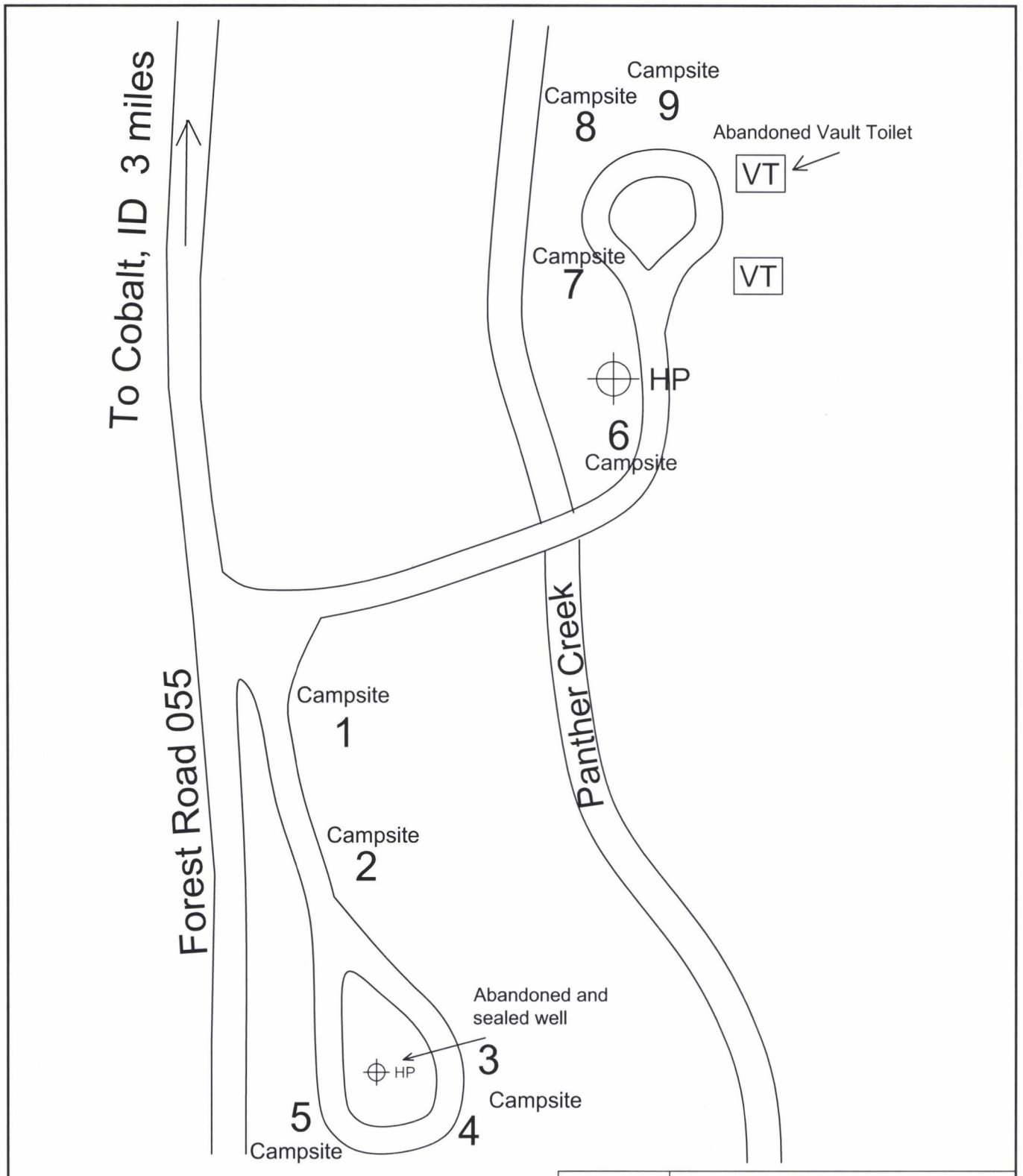
+ CL	Indicates a chlorine treatment system
+ ID	Indicates a iodine treatment system
+ OZ	Indicates an ozone treatment system
+ FIL	Indicates a filtration system

STORAGE

■ HYD	Indicates a hydropneumatic storage tank
■ ELEV	Indicates an elevated storage tank
■ BG	Indicates a below ground storage tank
■ OTHER	Indicates another type of storage tank

DISTRIBUTION AND POINT OF USE

△1	Indicates drain number 1, 2, 3, 4, etc.
Ⓡ1	Indicates point of use number 1, 2, 3, 4, etc.
———	Indicates verified distribution line
-------	Indicates estimated distribution line



MCDONALD FLATS CAMPGROUND

USDA FOREST SERVICE
MPA PROJECT

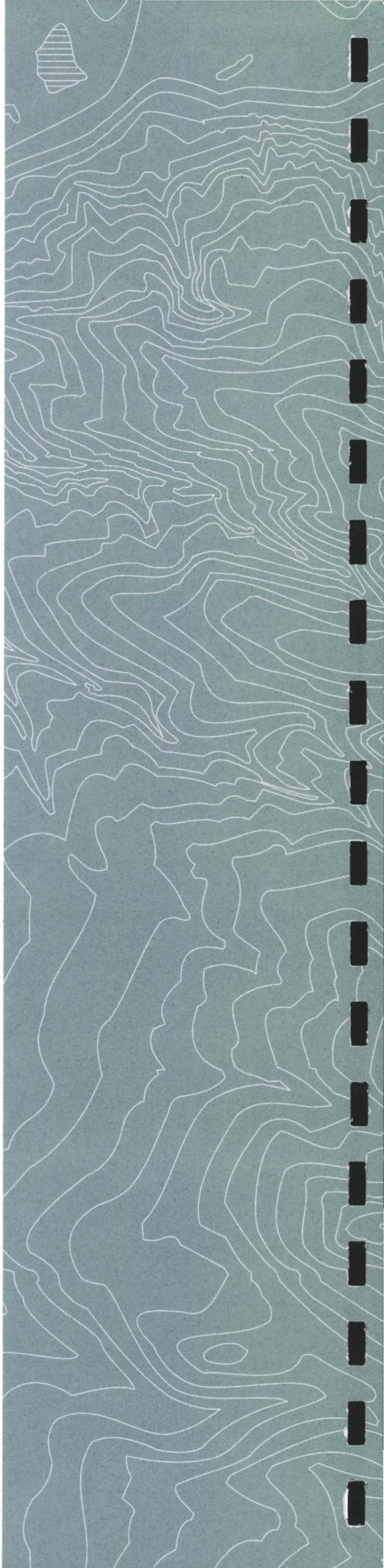
No.	Revisions	Date
#1		
#2		
#3		
#4		

Walsh
Environmental Scientists and Engineers, LLC

CREATED BY FIELD SKETCH:
NOT TO SCALE

Date: 06/21/2005	Drawn By: Z. ROSS
Project No. 6137-010	Checked By: Allison Haines
Figure:	Sheet of

P: projects\USFS\MPA\Reports\



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